AMENDMENTS TO CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A process for the removal of H_2S and mercaptans from a gaseous hydrocarbon stream comprising these compounds, which process comprises the steps of:
(a) removing H_2S from the gaseous hydrocarbon stream by contacting the gaseous hydrocarbon stream in a H_2S -removal zone with a first aqueous alkaline washing liquid buffered at a pH between 4.5 and 10, at a temperature between 5 and 70°C and a pressure between 1 and 100 bar, to obtain a H_2S -depleted gas stream and a sulphide-comprising aqueous stream;
(b) removing mercaptans from the H_2S -depleted gas stream obtained in step (a) by contacting the H_2S -depleted gas stream in a mercaptan-removal zone with a second aqueous alkaline washing liquid buffered at a pH between 5.5 and 10, at a temperature between 5 and 70°C and a pressure between 1 and 100 bar, wherein the pH of the aqueous alkaline washing liquid in the mercaptan-removal zone is higher than the pH of the aqueous washing liquid in the H_2S -removal zone, to obtain a mercaptan-depleted gas stream and an thiolate-comprising aqueous stream, said mercaptan-depleted gas stream having a level of H_2S below 10 ppmv and a level of mercaptans below 6 ppmv;
(c) contacting the combined aqueous streams comprising sulphide and thiolates obtained in step (a) and step (b) with sulphide-oxidizing bacteria in the presence of oxygen in an oxidation reactor to obtain a sulphur slurry and a regenerated aqueous alkaline washing liquid;
(d) separating at least part of the sulphur slurry obtained in step (c) from the regenerated aqueous alkaline washing liquid; and
(e) recycling the regenerated aqueous alkaline washing liquid from the oxidation reactor to the H_2S -removal zone in step (a) and to the mercaptan-removal zone in step (b).

2. (Canceled) A process according to claim 1, wherein the pH of the aqueous alkaline washing liquid in the mercaptan removal zone is higher than the pH of the aqueous washing liquid in the H_2S removal zone.

3. (Currently amended) A process according to claim 1 [[2]], wherein the aqueous alkaline washing liquid in step (a) is buffered at a pH between 5.5 and 9.

4. (Previously presented) A process according to claim 3, wherein the aqueous alkaline washing liquid in step (b) is buffered at a pH between 7.5 and 9.

5. (Previously presented) A process according to claim 4, wherein the contents of the oxidation reactor in step (c) is buffered at a pH between 8 and 10.

6. (Previously presented) A process according to 5, wherein the H_2S concentration of the gas stream entering the H_2S -removal zone in step (a) is between 150 ppmv and 50 vol%.

7. (Previously presented) A process according to claim 6, wherein the H_2S concentration of the H_2S -depleted gas stream is between 0.02 and 3.5 ppmv, based on the total gas stream.

8. (Previously presented) A process according to claim 7, wherein the concentration of mercaptan compounds in the mercaptan-depleted gas stream is less than 4 ppmv, based on the total mercaptan-depleted gas stream.

9. (Previously presented) A gas-treating unit for the removal of H_2S and mercaptans from a gaseous hydrocarbon stream comprising these compounds, the gas treating unit comprising at least two gas scrubbers for contacting the gaseous hydrocarbon stream with an aqueous alkaline washing liquid, said gas scrubbers having inlets and outlets, at least one oxidation reactor with inlets and outlets and a solid/liquid separator with an inlet and outlets, the first gas scrubber having a discharge line for gas debouching into the inlet of the second gas scrubber, the first and the second gas scrubbers both having a discharge line for liquid debouching into the oxidation reactor, the oxidation reactor having an outlet debouching into the inlet of the solid/liquid separator, an outlet for liquid debouching into the inlets of the first gas scrubber and the second gas scrubber.

10. (Previously presented) A gas treating unit according to claim 9, wherein the first and the second gas scrubber are placed on top of each other in one vessel.

11. (Previously presented) A process according to claim 1, wherein the concentration of total sulphur compounds in the mercaptan-depleted gas stream is between 0.05 and 3.5 ppmv and the concentration of mercaptan compounds in the mercaptan-depleted gas stream is less than 2 ppmv, based on the total mercaptan-depleted gas stream.